CLAIMS

1. Circuit for extracorporeal blood circulation comprising:

a blood withdrawal line for taking blood from a patient, having:

at least a first inlet end destined to be put into communication with a patient's vascular access;

at least a second outlet end destined to be connected with an inlet of a blood treatment unit; and

at least one pump portion designed to be coupled with a pump for blood circulation in the circuit;

a blood return line for returning treated blood to the patient, having:

at least a first inlet end destined to be put into communication with an outlet of said treatment unit; and

at least a second outlet end destined to be connected with a patient's vascular access;

at least one arterial chamber arranged on the withdrawal line between said pump portion and said second outlet end of the withdrawal line, and de-

signed to contain a first blood storage volume;

at least one venous chamber arranged on the return line and designed to contain a second blood storage volume;

said two chambers being solidly joined one to the other.

2. Circuit according to claim 1, in which said two chambers are joined one to the other into an integrated structure having an arterial inlet connection and an arterial outlet connection in fluid connection with the arterial chamber, and a venous inlet connection and a venous outlet connection in fluid connection with the venous chamber.

3. Circuit according to claim 2, in which said arterial outlet connection and said venous inlet connection are arranged on the same side of the integrated structure.

4. Circuit according to claim 2, in which said arterial outlet connection and said venous inlet connection have each an operating axis connecting to a corresponding portion of blood conveying line, said operating connection axes being parallel one to the other.

5. Circuit according to claim 2, in which said arterial inlet connection and said arterial outlet connection are arranged one beside the other on the same side of the integrated structure.

6. Circuit according to claim 2, in which the integrated structure is equipped inside with at least a first duct which connects a first of said connection with a first of said chambers.

7. Circuit according to claim 6, in which at least a part of said first duct passes through at least a part of a central portion of the integrated structure in which the two chambers are placed one beside the other.

8. Circuit according to claim 6, in which said first connection is far from said first chamber and is placed on one side of a second of said chambers placed beside the first chamber.

9. Circuit according to claim 8, in which the first chamber is placed opposite said side of the second chamber on which said first connection is located.

10. Circuit according to claim 6, in which said first duct comprises at least a length leading to said first connection, arranged above said second expansion chamber with reference to an operating configuration of the circuit.

11. Circuit according to claim 6, in which said first duct comprises at least a length extending mainly in vertical direction with reference to an operating configuration of the circuit, and arranged between the two chambers.

12. Circuit according to claim 6, in which said first

chamber is an arterial chamber.

13. Circuit according to claim 6, in which the integrated structure is equipped inside with at least a second duct which puts into fluid connection the second of said connections with the first chamber.

14. Circuit according to claim 13, in which at least a part of the pathway followed by said second duct is parallel to at least a part of the pathway of said first duct.

15. Circuit according to claim 13, in which said second duct comprises at least a length leading to said first expansion chamber and extending in a portion placed below the latter, with reference to an operating configuration of the circuit.

16. Circuit according to claim 15, in which said length of the second duct follows a bow-shaped pathway with its concavity pointing upwards.

17. Circuit according to claim 1, in which at least one of said two chambers has at least an inlet opening and an outlet opening arranged in a lower portion of said chamber, the inlet opening being located slightly above the outlet opening with reference to an operating configuration of the circuit.

18. Circuit according to claim 17, in which said chamber has an inclined bottom, said inlet opening and said outlet opening being placed close to an upper

end and to a lower end, respectively, of said inclined bottom.

19. Circuit according to claim 1, in which said two chambers are joined one to the other into an integrated structure having at least a deflecting element, designed to deviate downwards the blood flow entering a lateral inlet of at least a chamber.

20. Circuit according to claim 19, in which said deflecting element comprises a bow-shaped screen arranged before said lateral inlet having an upper end secured to a lateral wall of said chamber, and a free lower end.

21. Circuit according to claim 1, in which said chambers are joined one to the other into an integrated structure having at least a pair of pump portion connections connected to the two opposite ends of a pump portion of the return line, designed to be coupled with a pump.

22. Circuit according to claim 21, in which said pump portion of the return line is arranged within the extracorporeal circuit downstream from a venous chamber.

23. Circuit according to claim 21, in which said pump portion extends on a substantially vertical plane, with reference to an operating configuration of the circuit, and is arranged below the integrated structure.

24. Circuit according to claim 21, in which said integrated structure is equipped inside with a first connection cavity putting into fluid communication at least one of said pump portion connections with a venous chamber.

25. Circuit according to claim 21, in which said integrated structure is equipped inside with a second connection cavity putting into fluid communication at least one of said pump portion connections with a venous outlet connection attached to the integrated structure.

26. Circuit according to claim 1, in which said chambers are joined one to the other into an integrated structure made of a stiff material.

27. Circuit according to claim 1, in which said chambers have each a substantially flattened shape and are joined one beside the other on one lateral side into an integrated structure.

28. Circuit according to claim 1, comprising:

- a second venous chamber arranged on said return line downstream from said first chamber;

- a second arterial chamber arranged on said withdrawal line upstream from said arterial pump portion;

said further chambers being solidly joined one to the other to form one box-shaped structure.

29. Circuit according to claim 1, in which said withdrawal line and said return line are designed to be connected with a single-needle vascular access.

30. Disposable haematic module designed to be used on an extracorporeal blood treatment machine, comprising an extracorporeal circuit according to claim 1.

31. Blood treatment machine designed to receive a haematic module according to claim 30.

32. Machine according to claim 31, designed to carry out one or more of the treatments selected from the group including: haemodialysis, haemofiltration, haemodiafiltration, pure ultrafiltration.

33. Integrated structure comprising at least an arterial chamber and a venous chamber for an extracorporeal blood circuit, an arterial inlet connection and an arterial outlet connection in fluid connection with the arterial chamber, a venous inlet connection and a venous outlet connection in fluid connection with the venous chamber.

34. Integrated structure according to claim 33, said arterial outlet connection and said venous inlet connection being arranged on the same side of the integrated structure.

35. Integrated structure according to claim 33, in which said arterial outlet connection and said venous inlet connection have each an operating axis

connecting to a corresponding portion of blood conveying line, said operating connection axes being parallel one to the other.

36. Integrated structure to claim 33, in which said arterial inlet connection and said arterial outlet connection are arranged one beside the other on the same side of the integrated structure.

37. Integrated structure according to claim 33, equipped inside with at least a first duct which connects a first of said connection with a first of said chambers.

38. Integrated structure according to claim 37, in which at least a part of said first duct passes through at least a part of a central portion of the integrated structure in which the two chambers are placed one beside the other.

39. Integrated structure according to claim 37, in which said first connection is far from said first chamber and is placed on one side of a second of said chambers placed beside the first chamber.

40. Integrated structure according to claim 39, in which the first chamber is placed opposite said side of the second chamber on which said first connection is located.

41. Integrated structure according to claim 37, in which said first duct comprises at least a length leading to said first connection, arranged above

said second chamber with reference to an operating configuration of the structure.

42. Integrated structure according to claim 37, in which said first duct comprises at least a length extending mainly in vertical direction with reference to an operating configuration of the structure, and arranged between the two chambers.

43. Integrated structure according to claim 37, in which said first chamber is an arterial chamber.

44. Integrated structure according to claim 37, equipped inside with at least a second duct which puts into fluid connection the second of said connections with the first chamber.

45. Integrated structure according to claim 44, in which at least a part of the pathway followed by said second duct is parallel to at least a part of the pathway of said first duct.

46. Integrated structure according to claim 44, in which said second duct comprises at least a length leading to said first expansion chamber and extending in a portion placed below the latter, with reference to an operating configuration of the structure.

47. Integrated structure according to claim 46, in which said length of the second duct follows a bow-shaped pathway with its concavity pointing upwards.

48. Integrated structure according to claim 33, comprising at least a deflecting element, designed to deviate downwards the blood flow entering a lateral inlet of at least a chamber.

49. Integrated structure according to claim 48, in which said deflecting element comprises a bow-shaped screen arranged before said lateral inlet having an upper end secured to a lateral wall of said chamber, and a free lower end.

50. Integrated structure according to claim 33, comprising at least a pair of pump portion connections connected to the two opposite ends of a pump portion of the return line, designed to be coupled with a pump, said connections being configured and arranged so as a pump portion extends on a substantially vertical plane, with reference to an operating configuration of the structure, and is arranged below the integrated structure.

51. Integrated structure according to claim 50, equipped inside with a first connection cavity putting into fluid communication at least one of said pump portion connections with a venous chamber.

52. Integrated structure according to claim 50, equipped inside with a second connection cavity putting into fluid communication at least one of said pump portion connections with a venous outlet connection attached to the integrated structure.

53. Use of an integrated structure in an extracorporeal blood circuit, said integrated structure being made according to claim 33, at least a first blood chamber of said structure being used as arterial chamber, in a blood withdrawal line from the patient, and at least a second blood chamber of said structure being used as venous chamber, in a blood return line to the patient.

54. Use according to claim 53, in which the extracorporeal blood circuit enters the patient's cardiovascular system through a single access element.